

# What Makes a DARPA PM

- **Idea Generator**
- **Technical Expert**
- **Entrepreneur**
- **Passion for Drive Leading Edge Technology**
- **National Service**

**DARPA Hires Program Manager for their Program**

... if you have interest, formulate your program ideas along the lines of the following charts and contact the Office Director at:  
[john.zolper@darpa.mil](mailto:john.zolper@darpa.mil)

**Program Name**

**Name**

**Contact info**

# Resume (1 chart)

- **Who are you?**
- **What is your technical background?**
- **What key work have you done in the field?**
- **Recognition within the technical community**
- **Key awards**

# The Idea (1 chart)

- **What are you trying to accomplish?**
- **A diagram of what you plan on doing.**
- **Develop a performance trade space (e.g. power versus speed; MOPS/cm<sup>2</sup> versus watts) and show current SOA and where your program will take it**

# Technical Approach

- **How do you plan to accomplish the new capability**
- **What new results suggest this is possible**
- **Analysis of required performance**

# Technical Challenges

- **Breakdown the end product into key technical challenges that need to be overcome**
- **Quantify current performance and the final performance required to meet the complete program goals**
- **Include visuals or graphics where possible**

# Impact

- **If this is successful, what difference will it make**
- **How will this new technology impact system performance (quantify this)**
- **Who in the DoD will care?**
- **Are there commercial applications?**

# Program Plan and Metrics

- **Estimate how long it will take**
- **Break the overall program into phases with key performance metrics at the end of each phase**



## A good program plan should answer the questions below

### Heilmeier's Catechism

#### PRIMARY

- What are you trying to accomplish?
- How is it done now, and with what limitations?
- What is truly new in your approach which will remove current limitations and improve performance? How much will performance improve?
- If successful, what difference will it make?
- What are the mid-term, final exams or full scale applications required to prove your hypothesis? When will they be done?

#### SECONDARY

- How could this transition to the end user? (usually DoD)
- How much will it cost?

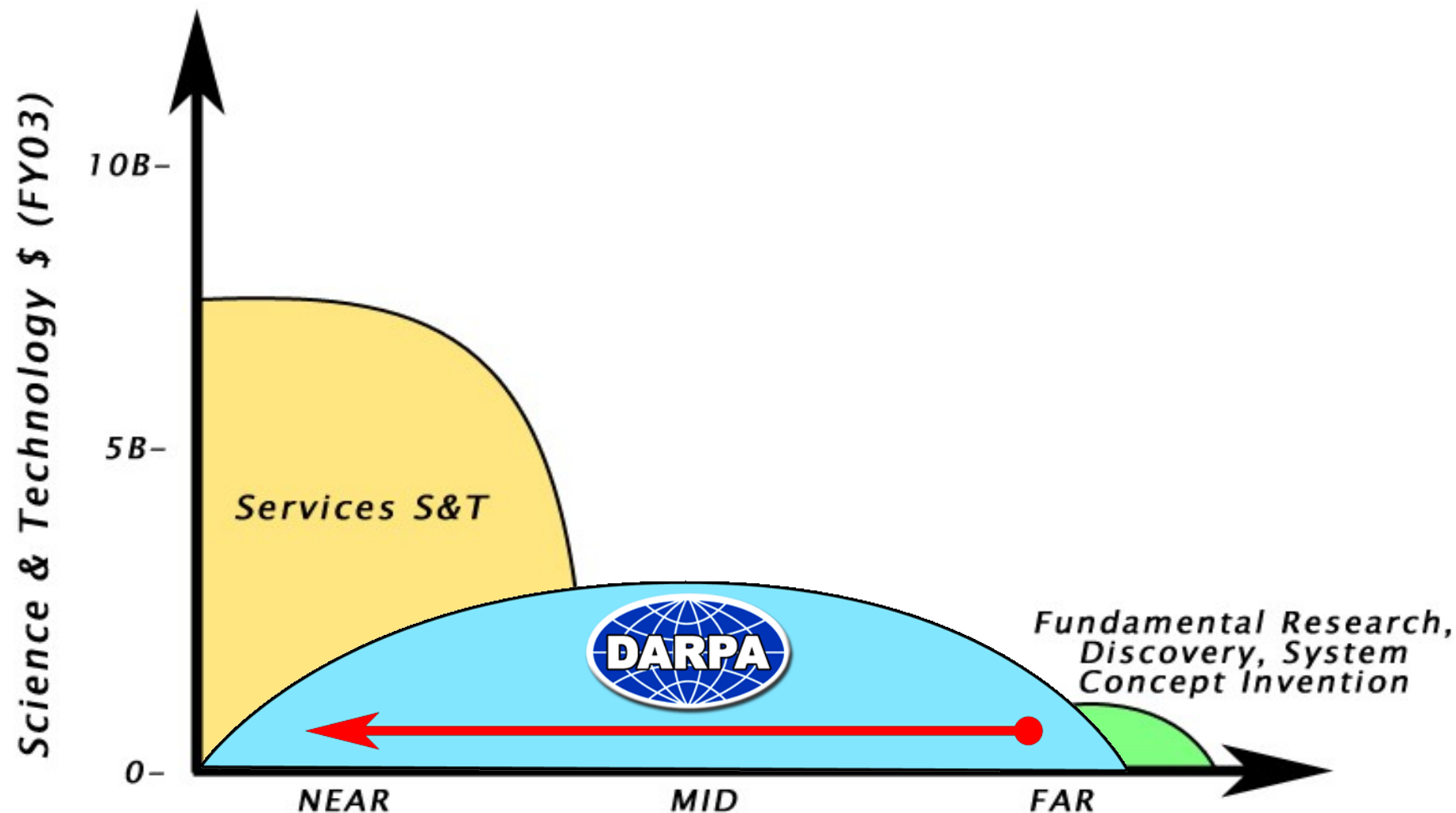
# **Microsystems Technology Office Overview: Background Info for PM Candidates**



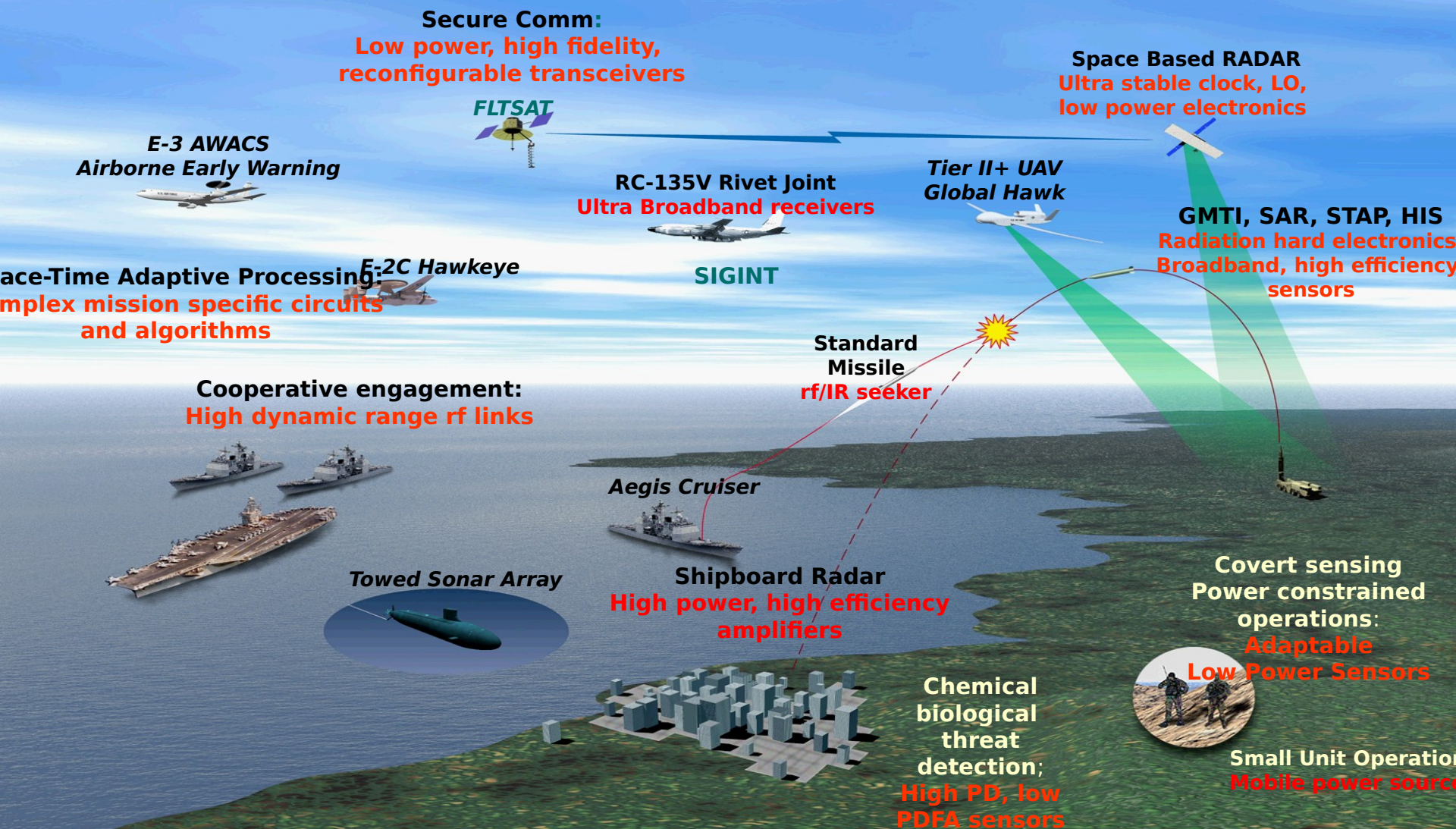
**Dr. John C. Zolper, Director**  
**Dr. Dean R. Collins, Deputy Director**

**2005**

# DARPA's Role in Science and Technology



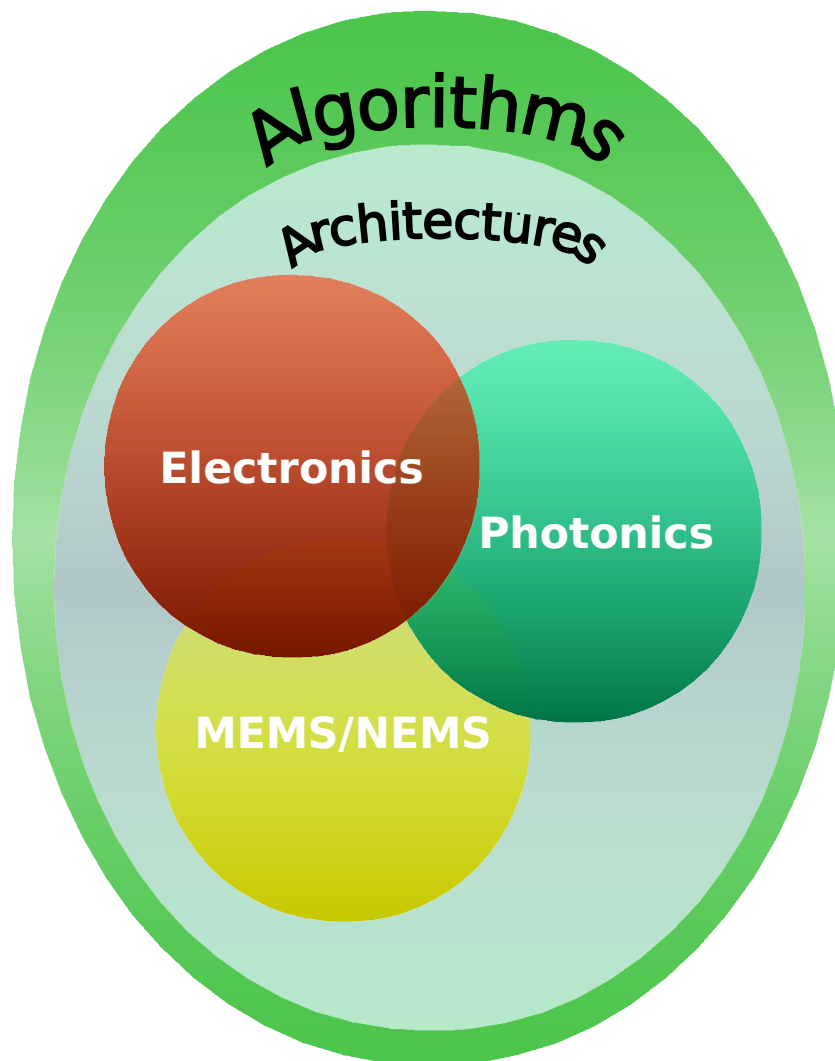
# Microsystems Components Driving Platform Innovation





**Exploit breakthroughs in materials, devices, circuits, and mathematics to develop beyond leading edge components with revolutionary performance and functionality to enable new platform capability for the Department of Defense.**

# Five Frontiers of Integrated Microsystem

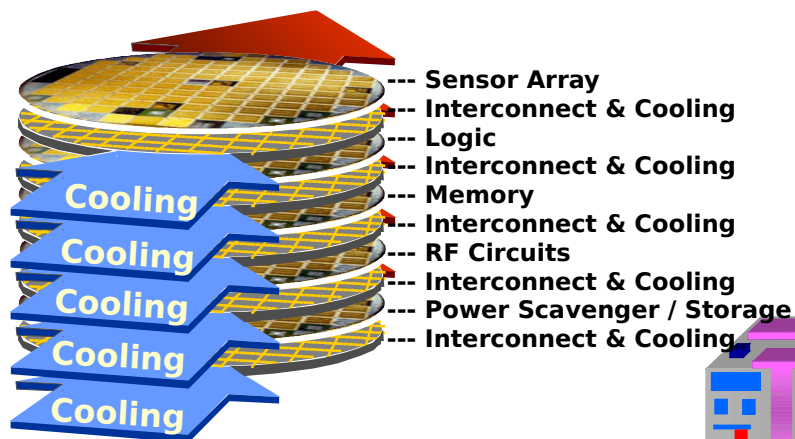


# Classes of Microsystems

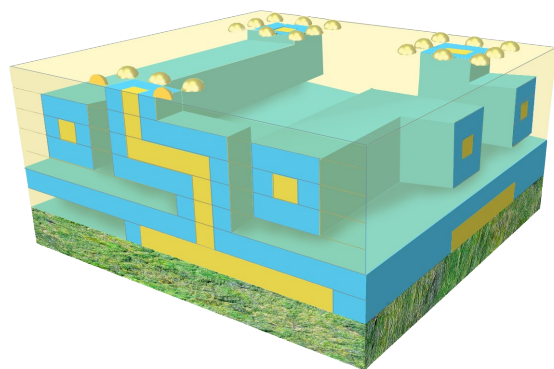
Increasing Capability

- **Intelligent:** High level of autonomy with the ability to reason and learn with time
- **Adaptable:** Some degree of autonomy to self optimize, test, or monitor. Able to change mode of operation.
- **Reconfigurable:** Predefined, deterministic set of operating parameters that can be selected externally.
- **Static:** Fabricated to design specifications with fixed performance.

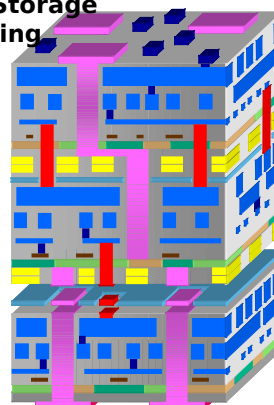
# Exploiting the 3<sup>rd</sup> Dimension



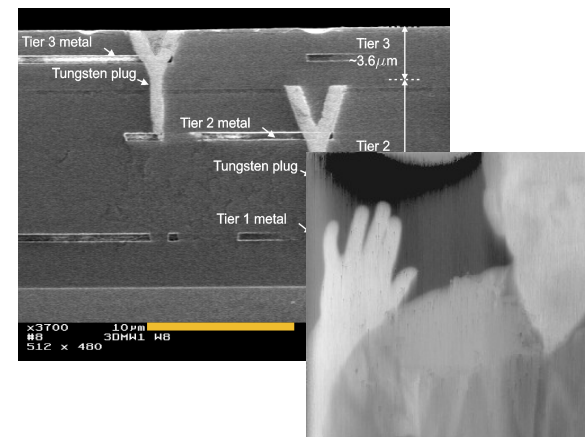
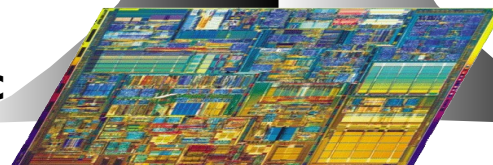
**3D Electronics**



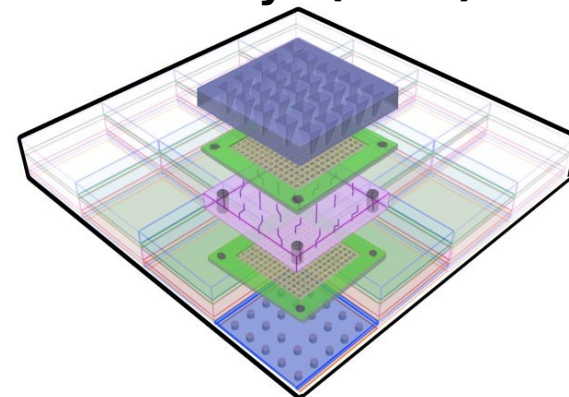
**3D Micro-Electromagnetic RF Systems (3D-MERFS)**



**Interconnects Architecture**



**Vertically Interconnected Sensor Arrays (VISA)**



**Scalable Microsystems for Affordable Reconfigurable Transceivers (SMART)**





# Review the Current MTO Programs at:



**<http://www.darpa.mil/mto/radprograms.html>**

***Integrated Microsystems  
driving platform capability  
for the warfighter***

